

## 5 & 6-Flute, Finishing Endmills, Standard, Neck Relief & Chip Control, 45 Degree Helix, Extra High Performance Endmills



- RedLine 6-flute Finishers are the 1st choice for milling a wide variety of difficult to machine alloys. Our high performance AlTiN coating allows you to run our tools wet or dry in many materials with excellent tool life.

- These Extra High Performance tools can be found on pages 81-83.

**Note:** For added tool life apply tools with a corner radius. Do not use tools with Weldon Flats in milling chucks or collet chucks for high speed applications.

### 6-Flute Finishers Speeds & Feeds

Material	Grades	Cut Type	Axial DOC	Radial DOC	SFM	Feed by Endmill Diameter (IPT)									
						1/8 (.1250)	3/16 (.1875)	1/4 (.2500)	5/16 (.3125)	3/8 (.3750)	1/2 (.5000)	5/8 (.625)	3/4 (.7500)	1 (1.000)	
<b>P - Steels</b>															
High Strength Tool Steel	Hardness < 36 HRC A2, D2, P20, H11, H13, S2, 01	Rough	1 x D	.1 x D	600	.0010	.0013	.0020	.0025	.0030	.0040	.0050	.0060	.0080	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
	Hardness 36 - 42 HRC A2, D2, P20, H11, H13, S2, 01	Rough	1 x D	.1 x D	600	.0010	.0013	.0020	.0025	.0030	.0040	.0050	.0060	.0080	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
	Hardness 43 - 50 HRC A2, D2, P20, H11, H13, S2, 01	Rough	1 x D	.08 x D	500	.0006	.0009	.0012	.0014	.0017	.0023	.0029	.0034	.0046	
		Finish	2 x D	.015 x D	400	.0003	.0005	.0007	.0007	.0010	.0014	.0018	.0020	.0023	
Hardness 51 - 63 HRC A2, D2, S2, 01	Rough	1 x D	.08 x D	350	.0004	.0007	.0010	.0013	.0015	.0020	.0025	.0030	.0040		
	Finish	2 x D	.015 x D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020		
<b>M - Stainless Steels</b>															
Austenitic	301-304L, 310, 316L, 321, 347	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
Martensitic	403, 410, 416, 420, 430, 431, 440	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
Precipitation Hardening	12/8, 15/5, 17/4, AM-350/355/363, PH13-8MO, PH14-8/MO	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.015 x D	400	.0003	.0005	.0007	.0007	.0010	.0014	.0018	.0020	.0023	
<b>K - Cast Irons</b>															
Ductile	A536, J434, 60-40-18	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
Gray	A48, A436, A319, Class 20, G4000	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
Malleable	A220, A602, J158	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.015 x D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020	
<b>N - Non-Ferrous</b>															
Brass/Bronze	Aluminum Bronze Low Silicon Bronze	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
Composites	G-10, Fiberglass, Graphite, Graphite Epoxy, Plastics	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
Copper		Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
Magnesium		Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040	
<b>S - High Temp Alloys</b>															
Cobalt Base	Stellite, HS-21, Haynes 25/188, X40, L605	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.015 x D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020	
Iron Base	Incoloy 800-802, Multmet N-155, Timkin 16-25-6, Carpenter 22-b3	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.015 x D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020	
Nickel Base	Inconel 625/718, Inco 700, 713C, 718, Monel 400-401, 404, K401, Rene, Rene 41 & 95 Hastelloy, Waspoly, Udimet 500 & 700	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.015 x D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020	
Titanium	Commercially Pure, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si, Ti-8Al-1Mo, Ti-8Al-4Mo	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Finish	2 x D	.015 x D	400	.0003	.0005	.0007	.0007	.0010	.0014	.0018	.0020	.0023	

D = tool diameter. Reduce feed rates by 20% when using long length tools. Starting parameters shown.

**NOTE:** Speeds and Feeds listed are estimated and will vary by application.